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Department of Economics

Course name:	**Intermediate microeconomics**
Course code:	**EC2101**
Examiner:	**Jonas Vlachos**
Number of credits:	**7,5 credits**
Date of exam:	**Sunday 23 March 2014**
Examination time:	**5 hours [09:00-14:00]**

Write your identification number on each paper and cover sheet (the number stated in the upper right hand corner on your exam cover).

Use one cover sheet per question. Explain notions/concepts and symbols. If you think that a question is vaguely formulated, specify the conditions used for solving it. Only legible exams will be marked. **No aids are allowed.**

The exam consists of 4 questions. Each question is worth 25 points, 100 points in total. For the grade E 45 points are required, for D 50 points, C 60 points, B 75 points and A 90 points. You also have credit from the assignment that will be added to your score.

Your results will be made available on your "My Studies" account (www.mitt.su.se), on Friday the 11th of April at the latest.

Good luck!

Question 1 (25 credits)

Beata's utility is determined by how many hours of free time she has, F, and much many goods she consumes, C. She has 12 hours per day during which she can either work or be free (the rest of the time she sleeps, cooks food and similar activities). Assume that Beata's hourly wage is w and that consumption good cost 1 Euro per unit. Her utility function is given by $u(F,C) = \sqrt{F \cdot C}$.

a) Using the Lagrange method, derive Beata's optimal choice of free time and work.

b) Illustrate your result from a) in a diagram with free time and consumption on the axis.

c) In a similar diagram as in b), illustrate the effect of a wage increase. Will Beata's time at work change? Please explain your result.

d) When Margaret Thatcher was the prime minister in the UK, she proposed a so called *poll tax*. This tax was just a fee that everyone would have to pay, regardless of their income level. Please explain how such a tax would affect the division of between work time and free time? (By the way, the *poll tax* was never introduced in the UK.)

Question 2 (25 credits)

Say that the inverse demand for a market is given by $P=A-Q$, where P is the price, A is a positive constant, and Q is the quantity sold. Also assume that the cost function is given by $C(Q) = 2 + Q$.

a) First assume that the market is characterized by facing perfect competition. What is the equilibrium price and output?

b) Now assume that one firm, you can call this firm A, takes over the whole market and starts acting as a monopolist. What level of output will the monopolist choose and what will the market price be? What are the profits of this monopolist

c) Now assume that another firm, call this B, thinks about entering the market. Firm B has the same cost function as firm A and firm A will know well in advance whether or not firm B will enter. In other words: if B decides to enter, firm A will decide on its quantity first. What is the production volume of each firm and what is total output?

d) Think now of a situation where the market in question a) was served by a government monopolist setting prices as if there were perfect competition on the market. The government now thinks about selling the right to serve the market to a private firm which would then be allowed to set prices in whatever way the firm wants. How much would a firm be willing to pay to government to get this right? Do you think it would be a good idea for the government to sell the firm?

Question 3 (25 credits)

Roger is a risk averse homeowner. His house burns down with probability p and in this case his wealth is reduced from 1000 000 to 0. The house does not burn down with probability $(1-p)$. Roger's utility is described by the utility function $u(c_i) = c_i^{0.5}$. Here $i = 1$ or 2 indicates different states of the world (house being burnt down or not).

a) Describe Roger's expected utility function.

b) Assume now that Roger can buy an insurance. In order to get K if his house burns down, he will have to pay γK to an insurance company. Assume further that Roger gets to buy the insurance at the actuarially fair price, that is $\gamma = p$. Set up the maximization problem and derive how much insurance he will buy?

c) Illustrate your result from b) in a graph and explain it intuitively.

d) Now assume that there are both high and low risk individuals in the insurance market. Those types now their own risk level but the insurance company cannot tell them apart. How would this affect Roger's opportunity to buy the level of insurance that you found under b) (Roger is a low risk individual). Please explain!

Question 4 (25 credits):

a) With the assistance of a graphical analysis, please explain why so called *Giffen goods* (goods for which consumption increases when their prices increase) can exist.

b) State the real world conditions under which *Giffen goods* are more likely to exist.

c) If you use price and consumption data, for example at the country or regional level, and find a positive correlation between prices and consumption levels of a certain good (that is: consumption is high when prices are high) can you then conclude that *Giffen*-effects are present? Briefly explain your answer.

d) If you were to empirically analyze *Giffen*-behavior, how would you go about doing this, given that there are no constraints or restrictions on the type of experiments that you could undertake?